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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/975,667	10/11/2001	Manoneet Singh	RAD295	9491

23494 7590 03/07/2006

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EXAMINER
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KIM, KEVIN

ART UNIT	PAPER NUMBER
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2638

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/975,667	<b>Applicant(s)</b> SINGH ET AL.	
	<b>Examiner</b> Kevin Y. Kim	<b>Art Unit</b> 2638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 09 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-3,6-13,16-20 and 45-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3,6-13 and 16-20 is/are allowed.
- 6) ☒ Claim(s) 45,48 is/are rejected.
- 7) ☒ Claim(s) 46,47,49 and 50 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 45 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata et al (US 6,731,911) in view of Kim (US 5,625,573).

#### **Claim 45.**

Referring to Fig.4, Hirata et al discloses a method of processing a received multicarrier signal (CDMA), the multicarrier signal comprising a plurality of subcarriers carrying pilot and data symbols, comprising:

correlating (4) the received pilot symbols to provide a correlation function;  
estimating (6) a frequency offset using the correlation function to provide a frequency synchronization adjustment;  
generating (3) a reference signal having a frequency responsive to the frequency synchronization adjustment; and  
synchronizing (2) the received multicarrier signal using the reference signal to provide a synchronized received multicarrier signal.

Hirata et al fails to teach how the frequency offset is determined while the claimed invention requires converting pilot symbols into received pilot multicarrier blocks, generating a computed pilot multicarrier block having complex conjugates of system pilot symbols corresponding to received pilot symbols, and correlating the received pilot multicarrier blocks with the computed pilot multicarrier block to provide a correlation function.

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Kim teaches correlating the pilot symbols with complex conjugates of system pilot symbols to provide a frequency offset. See claim 1 of the patent in particular.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to use the frequency offset measuring scheme of Kim in the Harat et al's multicarrier synchronization method.

Claim 48.

Though not described, it is quite established that the frequency synchronization is based on "times of peaks of the correlation function."

***Allowable Subject Matter***

3. Claims 1-3,6-13,16-20 are allowed.

4. Claims 46, 37, 49 and 50 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

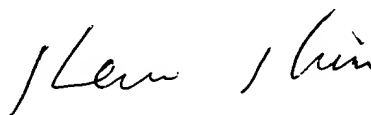
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Y. Kim whose telephone number is 571-272-3039. The examiner can normally be reached on 8AM --5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammed Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

March 6, 2006

A handwritten signature in black ink, appearing to read "Kevin Kim", is written above the printed name.

**KEVIN KIM  
PATENT EXAMINER**